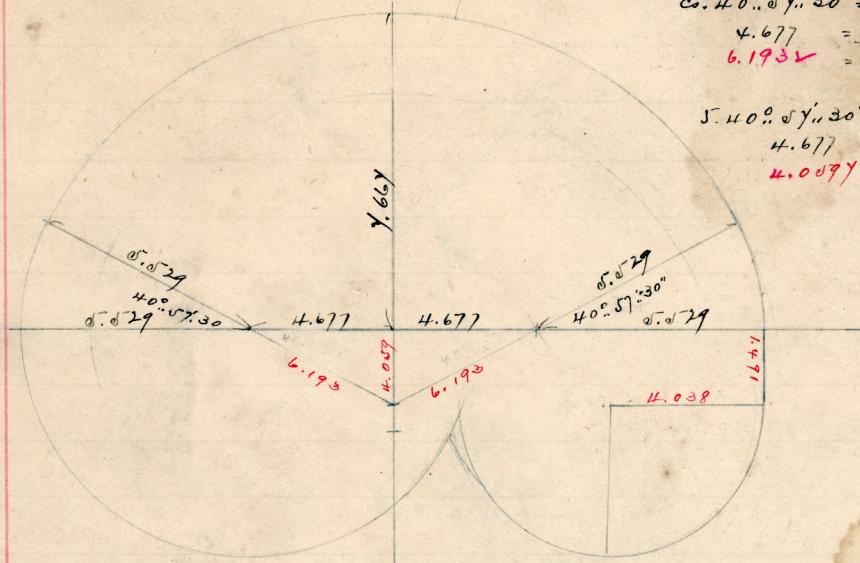


Wingohocking Seven January 1891

$$\text{Co. } 40.05 \text{ y., } 30'' = 0.1219458$$

$$4.677 = 0.6699674$$
~~$$6.1932 = 0.7919132$$~~

8. 829
4. 028
1. 491



$$5.40058' .30" = 9.9385251$$

$$4.677 = \underline{0.6699674}$$

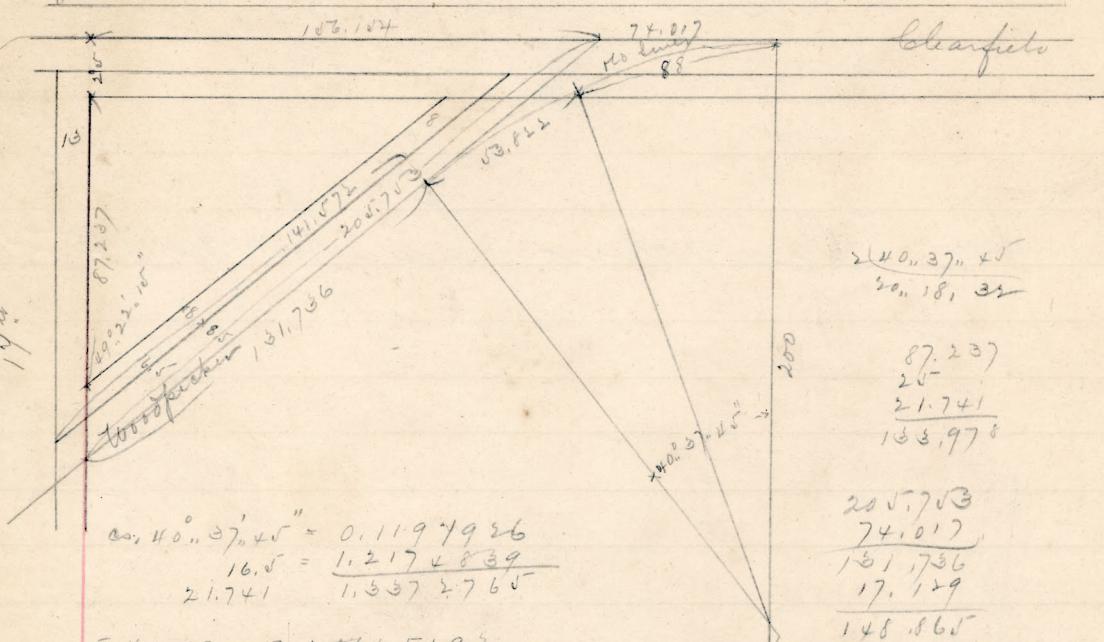
$$\underline{2.009} \quad 0.6084925$$

$t_1. 29^{\circ}. 01 -$	$0. 0913. 725^{\circ}$	2062.410
1298.383	$3. 1134028$	675.635
1602.416	$3. 2047753$	1306.775
$00.39^{\circ}. 01$	$9. 10957997$	60.727
2062.410	$3. 3143750$	1326.048
$3. 1945^{\circ}$	$1. 5230016$	70.1899
		2027.947

$$\begin{array}{r}
 5.1^{\circ} 43' = 1.5238016 \\
 5.39^{\circ} 01 = 9.7990278 \\
 \hline
 33.4 = 1.5237465 \\
 \hline
 701.899 = 2.8462759 \\
 \hline
 5.1^{\circ} 43' = 1.5238016 \\
 5.37.18 = 9.7824643 \\
 33.4 = 1.5237465 \\
 \hline
 675.635 = 2.8297124
 \end{array}
 \quad
 \begin{array}{r}
 2027.947 \\
 6326.548 \\
 701.899 \\
 7027.947 \\
 644.391 \\
 7672.358 \\
 39.381 \\
 \hline
 7632.957
 \end{array}$$

$$\begin{array}{r} 20.52.42 = 0.217.8357 \\ 440.667 = \underline{\underline{2.6490124}} \\ 735.4 \times 3 = 2.866.5491 \end{array}$$

Indiana St. Lever. March 1891



$$\begin{array}{rcl} \text{Qs. } 40.0, 37.0^{\circ} 45' & = & 0.1197926 \\ 16.0^{\circ} & = & \underline{1.2174839} \\ 21.741 & & \underline{1.5372765} \end{array}$$

$$\begin{array}{r}
 5.400.374\sqrt{ } \\
 1.33.978 \\
 \hline
 5.127033\sqrt{ } \\
 2.19455.28 \\
 \hline
 1.0665193 \\
 1.06104
 \end{array}$$

$$\cos 40^\circ 37'' \times 5 = \frac{0.1197926}{1.333484} = 205.765$$

4, 20° 18' 02" 9.068 304.5
200. = 2.3010300
1,869 334.5 = 74.017

$$2.40, 37, 45^{\circ} \quad \begin{array}{r} 0.1197926 \\ 1.1137424 \\ \hline 1.2337360 = 17.129 \end{array}$$

$$\begin{array}{r}
 5.40.371145 \\
 \times 8.15 \\
 \hline
 9.933487 \\
 0.9294109 \\
 \hline
 0.8628996 = 3.2959
 \end{array}$$

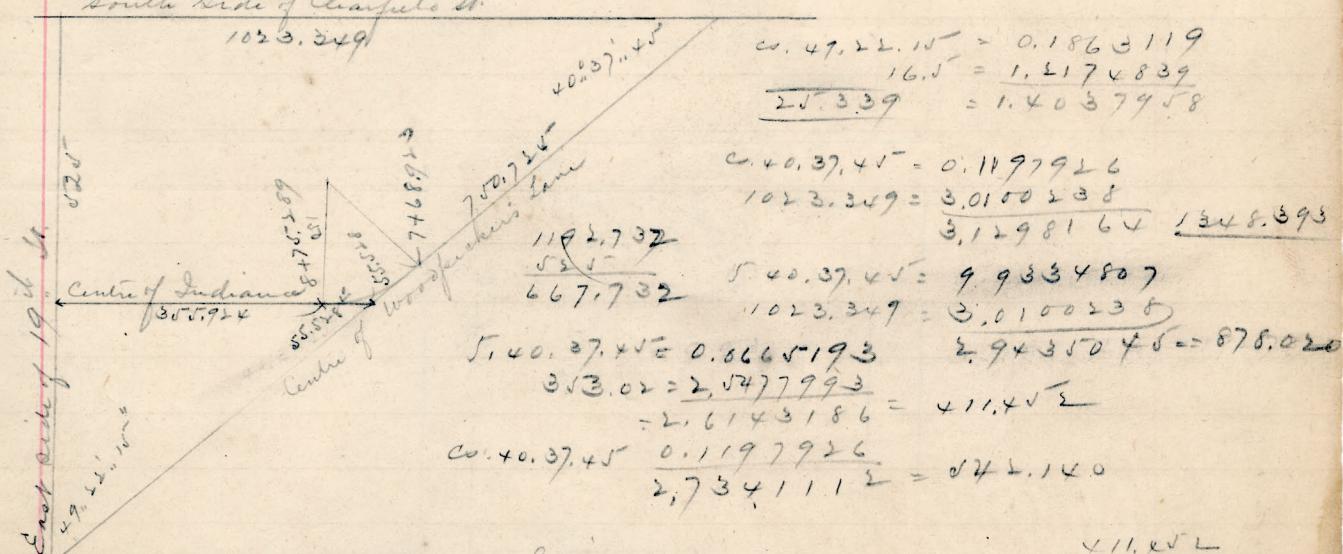
$$\begin{array}{r}
 \text{Const.} = 4,685.5749 \\
 200 = 2,301.0300 \\
 462.6 \cdot \frac{1}{100} = 5.1651404 \\
 41,822 = 2,151.74 \frac{3}{37.3} \\
 88 \\
 \hline
 53,622
 \end{array}$$

205.703
74.017
151.736
17.129
148.865
7.293
75

20, 18, 33

878.020
5-25
3.02

South Side of Charlotte St.



$$C. 49, 22, 15 = 0.186 \times 119 \\ 25 \quad 1.397.9 \times 00 \\ 1.5842519 = 38.395$$

const. 4,6855749

112 2.176 0913

146265-5,165,1304

$$106.366 = 1,0267966$$

$$\begin{array}{r}
 49.22.15 \\
 16.5 \\
 \hline
 25.339
 \end{array}
 \begin{array}{r}
 0.1863119 \\
 1.2174839 \\
 \hline
 1.4037958
 \end{array}$$

$$\begin{array}{r}
 0.40,37,45 = 0,1197926 \\
 1023,349 = \underline{3,0100238} \\
 \hline
 1,198164 \quad 1348,393
 \end{array}$$

$$\begin{array}{r} 3,1298164 \\ 5.40.37.45 = 9.9334807 \\ 1023.349 = 3,0100238 \end{array}$$

$$\begin{array}{r} 6665193 \\ 5477993 \\ \hline 143186 \end{array} = 411.4\sqrt{2}$$

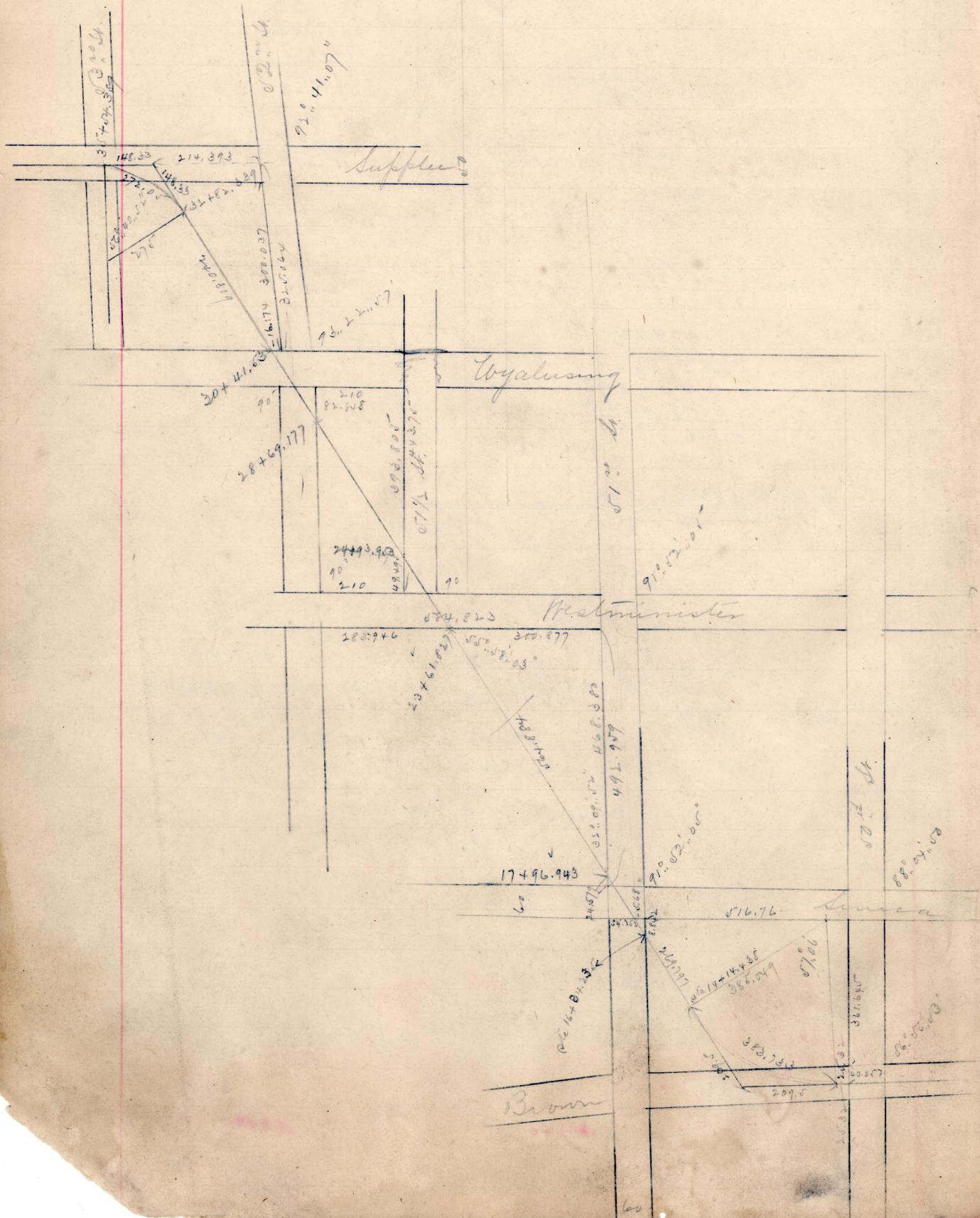
$$\text{Cov. } 40.37.45 \quad \frac{0.1197926}{2,734,111^2} = 0.42.140$$

$$\begin{array}{r} 10.53 \\ \times 10 \\ \hline 105.3 \end{array}$$

✓ 11. ✓ L
✓ ✓ ✓ L
3. ✓ ✓ ✓ 4

142,140
55.525
597.668
1348 393
750.726
38.393
769.118
74.077
715.101
53.822
768 923
106.366
875 829

for Chamber see page 10.



"Assessment Bills"

Morris St. from Winona Ave to Rutherford

~~256.. 5 3/8~~
~~256.. 5 3/8~~
~~1.67.. 6 1/8~~
~~225..~~
~~437.. 6 1/8~~
~~706.. 2 1/4 - 20-~~
~~706.. 4 1/4 - 20-~~
~~318.. 4 1/4~~
~~318.. 4 1/4~~

3392.. 2 1/2

50 ~~1.50~~ = ~~\$013.29~~ or ~~\$4975.~~

3342.. 2 1/4

Chellin Ave from Morris to Pulaski

444.. 3 1/2

954.. 6

97

857

1.50 = ~~\$1285.50~~ or ~~\$1250~~

Thurlieh St. Seven.

~~464~~
~~2~~
928
63
865

~~31.5~~
630

~~475~~
~~2~~
950
147
803
865

1648

1.50 = ~~\$2002 - or \$2450~~

Not assurable

Manayunk Directly Since Connection

Gum Lane

180.. 3 3/8

126.. 0 1/4

104.. 6 1/4

92.. 8

721.. 6 - 85 m E. chm - 100 fr Public School, - 80 Bay chm

293.. 5 1/4

23.. 1

98.. 8 1/8

71.. 3 3/8

84.. 6 1/4

172.. 2 1/8

168.. 6 1/8

43.. 11 1/8

2175

351.. 10 1/4

118.. 10 1/8

31.. 11

65.. 1 1/8

113.. 11 1/4

90.. 0 1/2

432.. 2 1/8

231.. 2 3/8

16

12.. 5 1/4

19.9.. 1 1/8

20

270.. 3 1/4

60.. 6 1/4

2013.5

2175

4188

4188

1.50

209400

4188

628200

6282 or 6200

Centr. St. -

125-
 94 0 1/2
 150 10 1/8
 67 9 5/8
 113 1 3/8
 107 8 3/8
 500 10 4/8
1159

636, 3 1/8 - 125 ~~St. David P. E. church~~
 501 6 1/8
1137
125
1012
1159
 2171 @ 1.50 - ~~32.56~~ ~~31.50~~ ~~31.50~~

~~Sycamore Ave.~~

1465
 1,000
1465 @ 1.50

~~no. Assessment~~

Wood St.

123, 4 1/8
 254 6 1/8
 187 3 3/4
 284 1
 131 8 1/8
 93 10 1/4
 163
 143 1 1/8
 308 3 7/8

1559 @ 1.50 = 2338.50 or 2250

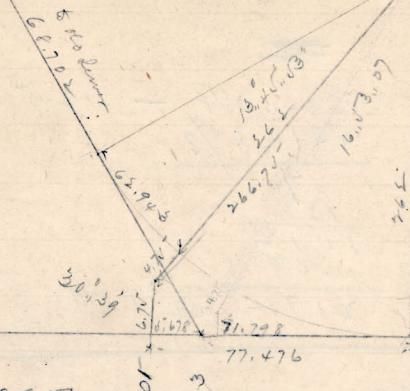
2100
 2250
 6050
\$104.00 ~~Manayunk Assessment.~~

Junction Chamber at 52nd St. & Wyalusing Av.
Mill Creek Sewer. April 30th 1891

Elev at Entrance of chamber

top 63.75

grade of sewer 0.5 for 100.



362 362
6.75 4.75
255.25 266.75

71.476
71.798
5.678
2964.547
5970.225

6.75
4.75
11.714
40.530
1.442
58.888

366.75 = 7.0738952
255.25 = 2.4069658
73.02 53" 9.9808664

15.16.53.07 = 9.4822196
255.25 = 2.4069658
77.476 = 1.8891854

Co. 16.53.07 = 0.0191388
4.75 = 0.6766936
4.9440 = 0.6958324
5.16.53.07" = 9.4822196
4.75 = 0.6766936
1.0418 = 0.1589162

5.16.53.07 = 0.0191388
11.714 = 1.0687052
38.571 = 1.5864856
Co. 16.53.07 0.0191388
40.330 = 1.6056244
Co. 6.51.43" = 0.0031220
6 = 0.7781513
6.0423 = 0.7812733
5.6.11.41.43 = 9.0804078
6 = 0.7781513
0.72203 = 9.8585591

Co. 10.01.24" = 0.00066798
4 = 0.6020600
4.0620 = 0.6087398
5.10.01.24" = 9.2473489
4 = 0.6020600
0.70698 = 9.8494089

0.16.53.07" = 9.9808612
8.875 = 0.9420081
5.16.53.07" = 0.9228695
2.5415 = 0.4050889
38.571 = 8.4135144
1 = 0.0000000
1.0418 = 8.4135144

Co. 10.29.04" = 0.0001458
13 = 1.1139434
13.000 = 1.1140892
5.1.0.29.04" = 8.4135144
13 = 1.1139434
0.83682 = 9.5274578
Co. 1.0.29.04" = 0.0001458
12.571 = 1.11000602
12.571 = 1.10002060
5.1.0.29.04" = 8.4135144
12.571 = 1.1000602
0.32627 = 9.5135746

Co. 6.57.10" = 0.0032209
13 = 1.1139434
13.097 = 1.1171643
5.6.57.10" = 9.0872219
13 = 1.1139434
1.8891 = 0.2011653



6.75
4.75
11.714
40.530
1.442
58.888

Co. 16.53.07" = 9.9808612
12.75 = 1.1055102
12.301 = 1.0863714
5.16.53.07" = 9.4822196
3.7034 = 0.5685910

16.53.07" = 1.01.34
10.51" 43
2 (20.947
10.478

30.951 = 8.6787952
3.703 = 0.5685910
10.01.24" = 9.5473489
Co. 10.01.24" = 0.0066798
30.951 = 1.3212047
21.276 = 1.3278846

10.475 = 2 (21.276
4.162 = 10.688
6.042 = 4.062
6.576 = 6.576
10.638 = 2.041
6.043 = 7.22
1.819 = 1.819
12.571 = 8.373
2.541 = 6.75
6.050 = 1.5123
36.05 = 8.123

36.05 = 8.4430947
8.123 = 0.9097165
13.41.53" = 9.3528112

7.
2.929 = 1.819
9.929 = 549
3.929 = 1.270
12.858 = 10.050
12.244 = 11.320
15.122 = 37.32

Co. 12.41.53 = 0.0107540
13 = 1.1139434
13.326 = 1.1246974
5.12.41.53 = 9.3528112
13 = 1.1139434
3.9292 = 0.4667546

Co. 12.41.53" = 0.01070240
10.05 = 1.0021661
10.302 = 1.0129201
1.12.41.53" = 9.3528112
10.05 = 1.0021661
3.3645 = 0.3549773

7.
0.337 = 9.929
6.663 = 1.579
3.37 = 8.340
6.226 = 3.20
3.20 = 1.589
6 = 3.178
12.571 = 9.680

Co. 6.57.10" = 9.9968780
4.1595 = 0.6622855
4.08621 = 0.6591635
5.6.57.10" = 9.0804078
0.54900 = 9.7395713

6 = 9.2218487
6.04 = 0.7810369

37.320 = 8.4280084
4.1563 = 0.6591635
6.58.10 = 9.0872219

4.1574 = 0.5865197

Co. 6.57.10" = 0.0032209
11.32 = 1.0538464
11.404 = 1.0570673

4.154 = 0.6650766

Co. 16.53.07" = 0.0191388
13 = 1.1139434
13.620 = 1.11330822

5.14.02.01" = 9.9243309
3.8857 = 0.5894075

5.16.53.07" = 9.4822196
13 = 1.1139434
3.9461 = 0.5962630

2969
001
14845
2969

U1

$$3.178 = 9.4978461$$
$$2.685 = 0.4289443$$
$$40.11.37 = 9.9267904$$

$$0.40.11.37 = 0.1169817$$
$$3.178 = 0.5021539$$
$$4.1604 = 0.6191356$$

$$0.40.11.37 = 9.8830183$$
$$6.326 = 0.8011292$$
$$4.8322 = 0.6841474$$
$$5.40.11.37 = 9.9267904$$
$$4.0826 = 0.6109379$$

$$1.685 = 9.7864822$$
$$1.34 = 0.1271048$$
$$39.30.14 = 9.9135870$$
$$6.39.20.14 = 0.1112798$$
$$1.635 = 0.2135178$$
$$2.1139 = 0.3250976$$

$$3.26 = 9.4867824$$
$$2.685 = 0.4289443$$
$$39.28.32 = 9.9157267$$
$$0.39.28.32 = 0.1124413$$
$$3.26 = 0.5132176$$
$$4.2233 = 0.6256589$$
$$0.39.28.32 = 9.8876587$$
$$6.326 = 0.8011292$$
$$4.8830 = 0.6886879$$
$$5.39.28.32 = 9.9157267$$
$$4.0217 = 0.6044146$$

$$6.1878 = 6.378$$
$$4.1208 = 4.10510$$
$$10.612 = 1.514$$
$$2.874 = 7.1044$$
$$30.39 = 16.53.07$$
$$16.45.13 = 13.45.13$$

$$\text{Const. } 4.6855749$$
$$262 = 2.4183015$$
$$49\sqrt{3} = 4.6950700$$
$$62.943 = 1.7989462$$
$$140.15 = 71.795$$
$$68.702$$
$$62.943$$
$$131.645$$
$$2.35$$
$$129.391$$

Mill Creek sewer pipe north of P.T.R.W.
of Jefferson St.

$$Q = rc \sqrt{\frac{s}{a}}$$

$$Q = 3 \times 1.75 \sqrt{\frac{16.7}{1860}}$$

$$Q = 2.25 \times 2.0215$$

$$Q = 0.749 \quad 6.0717$$

$$n = 3$$

$$c = 0.75$$

$$Q = 16.7$$

$$a = 1860$$

$$v = 18.1$$

$$16.7 = 1.2227165$$

$$2.0215 = 2.056791$$

$$1860 = 4(3.1831389)$$

$$6.0717 = 0.7833847$$

$$\begin{array}{r} 749 \\ 1860 \\ \hline 44940 \\ 3247 \\ 749 \\ \hline 1867 \end{array} \quad \begin{array}{r} 1018640 \\ 90 \\ \hline 116 \\ 108 \\ \hline 100 \\ 90 \\ \hline 106 \end{array}$$

$$\begin{array}{r} 21.0215 \\ 2.25 \\ \hline 101075 \\ 80430 \\ \hline 21019 \\ 21019 \\ \hline 298185 \\ 243068 \\ \hline 553979 \end{array} \quad \begin{array}{r} 16.7 \\ 6.0717 \\ \hline 4.548325 \end{array} \quad (749)$$

$$\begin{array}{r} 3.1416 = 9.5078491 \\ \sqrt{2.25} = 1.7524326 \\ 2 \times 1.2227165 \\ 4.262 = 0.6301408 \\ \hline 8.15 \end{array}$$

8'6" Cal 8'9" taken

Survey on Woodland Ave & 52nd St.
a = 280 acres.

ls 18' - 1000'

n 3"

g 4.3 per 100'

Drainage Area of Passaicink Server

28.72	53.10	77.45	24.38
05.67	21.72	53.10	27.10
<u>23.05</u>	<u>21.68</u>	<u>24.35</u>	<u>51.48</u>

33.01	60.1	200	174.48
05.91	33.01	200	40000
<u>27.10</u>	<u>27.09</u>	<u>43560</u>	<u>3059200.00</u>
			<u>174.40</u>
			<u>316800</u>

24.38
23.79
<u>48.17</u>

48-

26.87	51.25	46.17	
02.07	26.77		
24.33	24.38	40000	
21.02	51.63	1926800.00	<u>48</u>
04.30	26.06	174240	
<u>23.76</u>	<u>23.79</u>	<u>184400</u>	

18th St. Drainage Area

24.38
23.79
<u>48.17</u>

48-

59.71	84.01	80.37	
05.39	29.71	04.21	
<u>24.32</u>	<u>24.30</u>	<u>26.16</u>	
50000	40000		
43560/3019200.00	<u>47</u>	<u>82.89</u>	
174240	<u>20.37</u>		
<u>276800</u>	<u>36.12</u>		

19th St. Drainage Area

24.32
30.16
<u>50.48</u>

47-

36.46	63.70	31.31	87.50	27.34	27.34
09.12	36.46	03.80	31.51	43.00	43.00
<u>27.34</u>	<u>27.24</u>	<u>27.41</u>	<u>27.29</u>	<u>2190000</u>	<u>2190000</u>
				<u>217800</u>	<u>217800</u>
					<u>12000</u>

20th St. Drainage Area

27.34
27.41
<u>54.75</u>

57-

29.10	51.36	30.64	32.62	22.44
05.66	39.10	04.28	20.62	30.30
<u>22.44</u>	<u>22.28</u>	<u>26.36</u>	<u>26.18</u>	<u>48.80</u>

21st St. Drainage Area

22.44
30.30
<u>48.80</u>

48-

59.85	51.95	33.45	64.89	24.98	24.98
04.87	29.85	01.89	33.45	32.66	40000
24.98	25.10	31.56	31.48	2266400.00	<u>52</u>
				<u>217800</u>	
					<u>88400</u>

22nd St. Drainage Area

25.10
31.56
<u>56.66</u>

52-

03.30	80.94	35.60	66.72	23.40	23.40
05.75	43.30	04.41	35.60	68.73	40000
<u>37.55</u>	<u>37.64</u>	<u>31.19</u>	<u>31.12</u>	<u>3753200</u>	<u>64</u>
				<u>261360</u>	
					<u>139600</u>

23rd St. Drainage Area

37.64
31.19
<u>68.83</u>

64-

40.96	78.78	58.21	69.74	46.48	46.48
03.10	40.96	02.17	05.75	04.90	43020
<u>37.86</u>	<u>37.82</u>	<u>52.04</u>	<u>53.99</u>	<u>41.58</u>	<u>464125/5309200</u>
					<u>41.48</u>
					<u>43020</u>
					<u>98328</u>
					<u>87128</u>
					<u>112000</u>

24th St. Drainage Area

37.86
54.04
<u>41.58</u>

123-

69.65	70.10	33.32	60.43	91.37	64.56
05.39	06.00	06.57	33.32	20000	37.11
<u>65.26</u>	<u>62.16</u>	<u>56.78</u>	<u>27.11</u>	<u>48560/365480.00</u>	<u>85</u>
				<u>348480</u>	
				<u>170000</u>	

15th St. Drainage Area

64.56
37.11
<u>91.37</u>

85-

40.63	76.05	37.10	71.40	69.72	69.72
05.43	40.63	02.80	37.10	40000	34.30
<u>35.20</u>	<u>35.42</u>	<u>34.30</u>	<u>34.30</u>	<u>48560/278880.00</u>	<u>65</u>
				<u>261360</u>	
					<u>170200</u>

34.30
69.72
<u>65</u>

65-

BU EAU O SURVEYS.

DE RTM, LNU

15
8 100/13,000/16
8 100
4 900

265	8.18 th St. 5'6" air.	14	34300
325			
45	5 21 st St. 6'9" air.	14	34300
45			
125 th Acre	6 24 th St. 6" air.	16	22800
47			
51	6 River 8' 9" air.	20	81000
45			
268,5			140 100
52			
64			
384,15			
123			
85			
592,15			

8000/12000.00

additional at 18th St.

51.91	12.31	49.24
02.70	02.21	42.80
49.21	49.10	92.01
		40000
4640	88.90	3680400.00
53.60	46.40	634400
42180	42.36	483560/4314800/392040
		99 = 100 Acre

125,5
100
520.5 Acre to 18th St.
72
47
51
45
441 Acre to 21st St.

to 21 st St.	39.4400	
40.60	78.05	37.45
03.15	40.60	40.07
37.45	37.45	77.52
42.97	82.97	400000
02.90	42.97	3100800.00
40.07	40.00	304920
		51600

50
52
64
607 Acre to 21st St.
42
123
80

to 21 st St.	52.1	
24.61	34.20	400000
02.96	02.40	2080000
51.65	52.0	87800
4.3060	4.3060	49500
		134240
		425400

857 Acre to River

to River	44.4	
44.35	88.78	400000
00.09	44.38	23060/177600.00
44.29	44.40	134240
		33600

$\theta = r c \sqrt{\frac{e}{a}}$

$\theta = 3 \times 75 \sqrt{\frac{3}{807}}$

$\theta = 2.25 \sqrt{\frac{3}{807}}$

$\theta = 2.25 \times 1.316 = \frac{3.961}{641} = 6.17$

$\theta = r c \sqrt{\frac{e}{a}}$

$\theta = 3 \times 75 \sqrt{\frac{3}{607}}$

$\theta = \frac{2.25 \times 1.316}{4.96} = \frac{2.961}{4.96} = 0.607$

$\theta = \frac{2.961}{4.96} = \frac{0.607}{0.607}$

$\theta = \frac{2.961}{4.96} = \frac{0.607}{0.607}$

818th St. made 8'0" air
cal 9' 821st made 9'6" air
cal 10' to 22st St. 10'6" air
cal 11'0" to River 11'6" air

Sewer at Front & Lippincott Sts.

Area = 12.85 Acre.

$$\text{Slope } 17 - \quad Q = rc \sqrt{\frac{a}{2}} = \frac{.75}{2.25}$$

$$r. \quad 3'' \quad Q = 3 \times 75 \times \sqrt{\frac{17}{14.85}}$$

$$\text{Coef. } .75 \quad Q = 2.25 \times \frac{2.0305}{6.308} \quad 6.308 / 2.0305 = (3271)$$

$$\text{Quantity} = .75397 \text{ cu. Acre.} \quad \begin{array}{r} .3271 \\ \hline 14.85 \\ \hline 163.55 \\ 561.68 \\ 1308.4 \\ \hline 3271 \\ \hline 785.7435 \\ 2.25 \\ \hline 285.7175 \\ 971.4870 \\ \hline 1092.92875 \end{array} \quad \begin{array}{r} .3271 \\ \hline 2.25 \\ \hline 163.55 \\ 654.2 \\ \hline 654.2 \\ \hline 4860 \end{array} \quad \begin{array}{r} 186.24 \\ \hline 16510 \\ \hline 12416 \\ 43940 \\ 43454 \\ \hline 4860 \end{array}$$

$$\begin{array}{r} 285.7175 \\ 971.4870 \\ \hline 1092.92875 \end{array}$$

Quantity reaching sewer. 1092.923 cu. ft.

$$\begin{array}{r} 210.75 \\ 153.70 \\ 153.70 \\ 368.75 \\ 376.25 \\ 161.25 \\ 368.75 \\ \hline 28.890625 \end{array} \quad \begin{array}{r} 28.8906 \\ 3.14159 \\ 260.0154 \\ 1444.530 \\ 288.906 \\ 1155.624 \\ 288.906 \\ \hline 866718 \\ \hline 90768420054 \end{array} \quad \begin{array}{l} \text{velocity } 14 \text{ ft. per sec.} \\ \text{sq. size } 9'3" \end{array}$$

Bridge over Cashiers Creek

single span 1211 cu yd. @ $\frac{1}{10}$ cu yd. = 12110
nubile approach 654 @ 6 " $\frac{3924}{16034}$
1865 cu yd.

Down Passayunk

$$g = nc \sqrt{\frac{e}{a}} = g = 3 \times 7.5 \sqrt{\frac{2}{892}} = \frac{2.25 \times 1.19}{4.93} = \frac{2.6775}{4.93} = .543$$

$$\frac{219.5}{+170} = \frac{22.562}{3.142} \quad 4.65$$

$$\begin{array}{r} 70.889004 \\ 4.6 \\ \hline 326.096 \end{array}$$

$$g = 3 \times 7.5 \sqrt{\frac{2}{2}}$$

cal 9' 6" secu

$$\begin{array}{r} 1086 \\ 4887 \\ 3715 \\ \hline 321456 \end{array}$$

lateral 10' 0" river from River to 24' 6" st.

" 8' 6" " " 24' 6. to 21' st.

" 7' 6" " " 21" " 18' st.

" 6" " 18" " 16"

Down Shunk + Passayunk

$$g = nc \sqrt{\frac{e}{a}} = 3 \times 7.5 \sqrt{\frac{2}{892}} = \frac{2.25 \times 1.19}{5.41} = \frac{2.6775}{5.41} = \frac{2.6775}{5.41} = .493$$

$$\frac{6.5^2}{42.25^2}$$

$$\frac{3.142}{84.50}$$

$$\frac{169.00}{422.5}$$

$$\frac{126.75}{132.649.60}$$

$$\frac{2.1}{132.6}$$

$$\frac{39.78}{141.006}$$

$$6.75^2 = 40.5625$$

$$\begin{array}{r} 149.5 \\ 85.7 \\ \hline 345.1 \\ 346.5 \\ \hline 390.0 \\ 422.0-01 \end{array}$$

to River 13' 0"

$$\frac{223}{128}$$

$$\frac{361}{361}$$

$$132.65$$

$$3.1$$

$$66.3$$

$$2.5$$

$$597.95$$

$$464.275$$

$$2.1$$

$$121.00$$

$$3.025$$

$$9.075$$

$$90.04$$

$$5.5$$

$$0.99186$$

$$3$$

$$103.88$$

$$1.804$$

$$8.2$$

$$207.6$$

$$31.14$$

$$33.216$$

$$3.142$$

$$16$$

$$108.52$$

$$3.142$$

$$170.0$$

$$50.27$$

$$180.625$$

$$3.142$$

$$36.124$$

$$72.248$$

$$180.62$$

$$54.1.86$$

$$567.50.804$$

$$4.4$$

$$226.8$$

$$226.8$$

$$229.48$$

$$g = 3 \times 7.5 \sqrt{\frac{2}{607}} = \frac{2.25 \times 1.19}{4.96} = \frac{2.6775}{4.96} = \frac{2.6775}{4.96} = .543$$

$$\begin{array}{r} 607 \\ 192 \\ \hline 327.78 \end{array}$$

$$g = 3 \times 7.5 \sqrt{\frac{2}{441}} = \frac{2.25 \times 1.19}{4.96} = \frac{2.6775}{4.96} = \frac{2.6775}{4.96} = .543$$

$$\begin{array}{r} 441 \\ 198 \\ \hline 242.8 \end{array}$$

$$g = 3 \times 7.5 \sqrt{\frac{2}{3085}} = \frac{2.25 \times 1.19}{4.96} = \frac{2.6775}{4.96} = \frac{2.6775}{4.96} = .543$$

$$\begin{array}{r} 3085 \\ 1984 \\ \hline 327.78 \end{array}$$

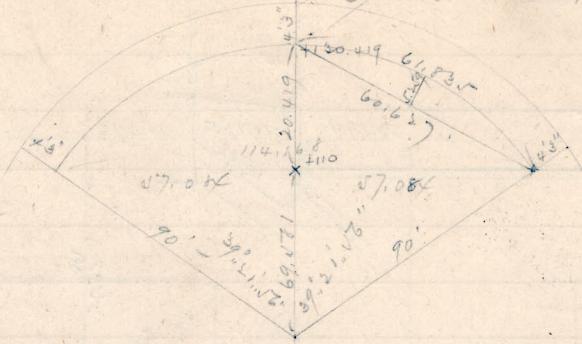
$$4.183) 2.6775 - .584$$

$$\begin{array}{r} 2391.5 \\ 19360 \\ \hline 4573 \end{array}$$

$$\begin{array}{r} 38608 \\ 34664 \\ \hline 19360 \end{array}$$

10/6/91

19



$$90. = 8.8457575$$

$$69.071 = 1.8424907$$

$$39^{\circ}21'56" = 9.8882482$$

$$\begin{array}{r} 57.084 \\ \underline{- 2} \\ 11.4.168 \end{array} \quad \begin{array}{r} 2140.38.04 \\ - 70.19.02 \\ \hline \end{array}$$

$$5.39021 \cdot 10^{-6} = 9.9140272$$

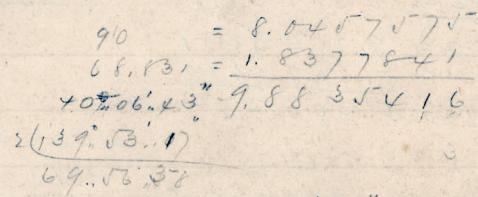
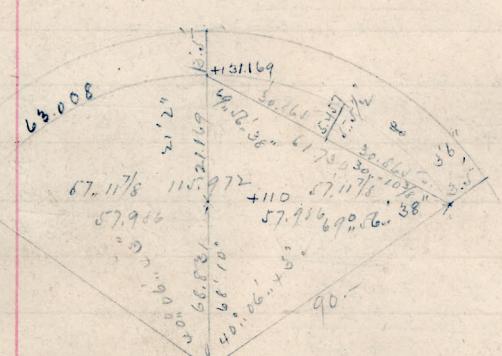
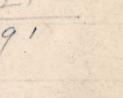
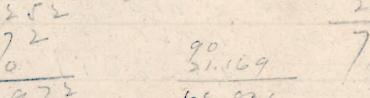
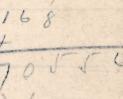
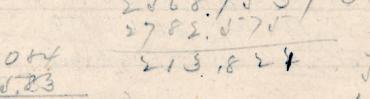
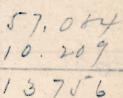
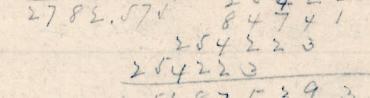
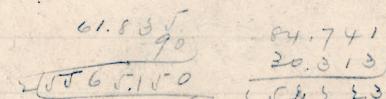
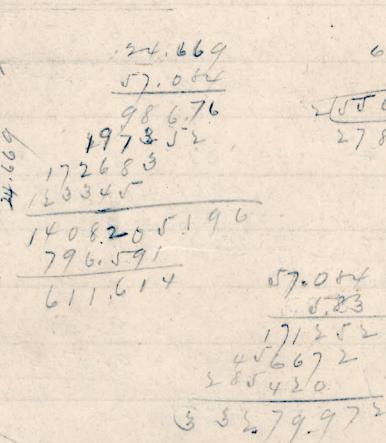
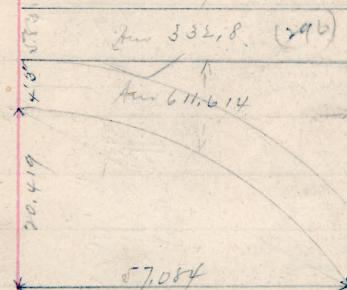
$$69,581 = 1.8424907$$

$$57,084 = 1.7565179$$

$$\begin{array}{r}
 5.70 \cdot 19.02 = 0.44646875 \\
 30.313 - 1.4816289 \\
 \hline
 84.741 - 1.9280944 \\
 \hline
 82.812
 \end{array}$$

$$\begin{aligned} \text{const.} &= 4.6855749 \\ 9.0 &= 1.9542425 \\ 141716 &= 5.1514189 \\ 1.0215 &= 1.7912363 \end{aligned}$$

$$\begin{array}{rcl}
 5.70 \text{ in } 19.02 & = & 0.0261466 \\
 5.39 \text{ in } 21.56 & = & 0.8022713 \\
 90 & = & 1.9042425 \\
 60.627 & = & 1.7826604
 \end{array}$$



$$\begin{array}{r}
 5. 69. 56. 88 = 0.4376124 \quad 840.06.43 = 9.8090767 \\
 20.865 = 1.4894663 \quad 90 \quad 1.9542525 \\
 84.043 = 1.9870787 \quad 26.4730 = 1.7904984 \\
 90 \\
 \hline
 1.457
 \end{array}$$

$$\begin{array}{r}
 5.69^{\circ} 56'.38'' = 0.0271692 \\
 540^{\circ} 00'. \times 3'' \quad 9.8090767 \\
 \hline
 90 \quad 1.9542525 \\
 \hline
 2(61730 = 1.7904984 \\
 30.865
 \end{array}$$

$$\text{Const.} = 4,685^{\circ}574.9$$

$$90 = 1.9542425$$

$$\begin{array}{r} 944408 \\ \hline 63,008 \end{array} = \begin{array}{r} 5.159\ 57\ 62 \\ 1.799\ 39\ 36 \end{array}$$

$$\begin{array}{r}
 63,008 \\
 1,376 \\
 \hline
 61,632
 \end{array}$$

$$\begin{array}{r}
 5.23^{\circ} 00' 27'' = 9.6280099 \\
 17 = 112304484 \\
 \hline
 9.2187 = 0.8584588 \\
 \\[10pt]
 2.388 \\
 17 \\
 \hline
 16485 \\
 2350 \\
 \hline
 4003 \\
 3
 \end{array}
 \quad
 \begin{array}{r}
 1950 \\
 11 \\
 85 \\
 26 \\
 37 \\
 19 \\
 \hline
 2028 \\
 121735 \\
 \hline
 2040.735
 \end{array}$$

$$\text{mat lang } 43.000:57 = \frac{4246}{50} \\ 8.4920$$

2040.738		
8.492	5.66" 59.83" = 2.3548	20
2049.230		
13.992	42.387	47.0960
2063.282	2.3587	4.709
130.25	40.002	42.3870
1943.972		
42.387		
1985.359		
4.709	42.46	30
		127.380

43.495	290.72	1985.357
2033.563	33.16	387.047
36.62	42.387	1598.312
1996.943	13.037	28.247
72.280	7.643	1070.065
2069.223	387.047	456.304
36.62		1113.767
2062.603		28.247
158.628		1085.514
2191.231	40.035	501.301
40.035	9418	584.213
2281.263		
177.34		
12		
41 119	30.617	

$$\begin{array}{r}
 4/120.37 \\
 32.34 \\
 56.659 \\
 \hline
 128.25
 \end{array}
 \quad
 \begin{array}{r}
 444.222 \\
 430.23 \\
 \hline
 13.992 \\
 \hline
 0.66.59.33 \\
 \hline
 47 = 1.6720979 \\
 \hline
 120.250 = 2.0800861. \\
 \hline
 0.66.59.33 = 0.4079882 \\
 \hline
 17 = 1.2304489 \\
 \hline
 43.495 = 1.6384371
 \end{array}
 \quad
 \begin{array}{r}
 = 2.6476000 \\
 \hline
 \text{const.} = 4.6855749 \\
 na 180 = 2.2552725 \\
 \hline
 82827" = 4.9181719 \\
 \hline
 72.280 = 1.8590193
 \end{array}$$

$400^{\circ} 00' 00''$	$23^{\circ} 00' 00''$	$23^{\circ} 00' 00''$
0026	12	1.0791812
18	13.037	1.1151792
208	$5.23^{\circ} 00' 00''$	9.6280100
26	18	1.2552725
0468	7.6433	0.8832825
18.628	$23^{\circ} 00' 00''$	0.0359980
11352	26	1.4149733
245.108	38.247	1.4509713
2.552		
180.456		

430.13	36.62
13.037	
13.037	20.62.602
	158.628
456.304	21.91.2-31
	40.032
480.860	22.81.263
13.037	177.34
15. -	12
0.047	46.049
508.944	2466.652
7.643	30.615
501.301	2497.267
	26

51 Ac.
45 " "
32 "
64 50
218 18
30
245 220
72

$$\begin{aligned}
 \text{Co. 66}^{\circ} 59' 33'' &= 0.4079882 \\
 62 &= \underline{1.7923917} \\
 158.628 &= \underline{2.003799} \\
 &\quad \underline{5.22} \\
 &\quad \underline{520} \\
 \text{Co. 66}^{\circ} 59' 33'' &= 0.4079882 \\
 82 &= \underline{1.9138139} \\
 209.798 &= \underline{2.3218021} \\
 5.6 & \\
 \text{const.} &= 4.6858749 \\
 60 &= 1.7781513 \\
 221027'' &= \underline{5.3444434} \\
 \underline{64.293} &= \underline{4.8081696}
 \end{aligned}$$

$$\begin{array}{r}
 61 \overset{t}{\cancel{4}} \quad 23.47 \\
 \underline{60} \\
 364 \overset{0}{\cancel{4}} \\
 \underline{36} \\
 368 \overset{3}{\cancel{3}} \\
 \underline{60} \\
 220980 \\
 \underline{47} \\
 221027
 \end{array}$$

116.66
75
83.33
274.99

12/26/91

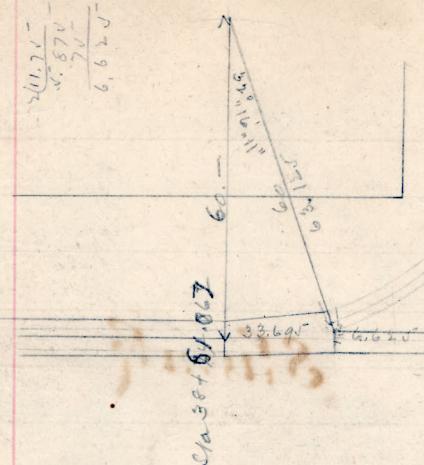
3375
Lib

$$\frac{2.625}{60.75} \\ \frac{60.75}{63.375}$$

$$\frac{2.625}{60.75} \\ \frac{60.75}{63.375}$$

23

$$\frac{5.875}{75} \\ \frac{75}{6.625}$$



Shank - St.

$$\frac{32.16.11}{16.05.15}$$

$$\frac{11.75}{75} \\ \frac{4.65}{17.15} \\ \frac{21.40}{6.700}$$

$$\frac{6.5}{5.875} \\ \frac{6.625}{11.276}$$

$$\frac{6.5}{4.776} \\ \frac{10}{2.936} \\ \frac{7.064}{16} \\ \frac{17.064}{6.5} \\ \frac{2.799}{9.299} \\ \frac{6.187}{10.486} \\ \frac{7.743}{6.187} \\ \frac{1.586}{17.719} \\ \frac{10.384}{7.335}$$

$$\frac{63.15.11}{53.37.11} = 8.1997986 \\ \frac{53.37.11}{32.16.11} = 1.7273379$$

$$\frac{32.16.11}{57.35.16.11} = 9.9271365$$

$$\frac{57.35.16.11}{53.37.11} = 9.8002283$$

$$\frac{53.37.11}{53.37.11} = 1.7273379$$

$$\frac{53.37.11}{53.37.11} = 1.5275662$$

$$\frac{57.16.06.05}{60} = 9.4613360$$

$$\frac{60}{17.357} = 1.7781513$$

$$\frac{17.357}{2.9353} = 1.2394875$$

$$\frac{2.9353}{2.9353} = 9.9271365$$

$$\frac{2.9353}{2.9353} = 0.7403627$$

$$\frac{2.9353}{2.9353} = 0.6674992$$

$$\frac{2.9353}{2.9353} = 9.8002283$$

$$\frac{2.9353}{2.9353} = 0.4677561$$

$$\frac{2.9353}{2.9353} = 0.4677561$$

$$\frac{2.9353}{2.9353} = 0.0002717$$

$$\frac{17.151}{17.401} = 1.2342894$$

$$\frac{17.401}{17.401} = 1.2405611$$

$$\frac{20.151}{20.151} = 8.6989700$$

$$\frac{0.625}{0.625} = 9.7908600$$

$$\frac{1.47024}{1.47024} = 8.4948500$$

$$\frac{1.47024}{1.47024} = 9.2334667$$

$$\frac{0.875}{0.875} = 0.7690079$$

$$\frac{1.0057}{1.0057} = 0.0024746$$

$$\frac{17.064}{17.064} = 8.7679192$$

$$\frac{4.776}{4.776} = 0.6790643$$

$$\frac{10.38610}{10.38610} = 9.4469835$$

$$\frac{17.064}{17.064} = 1.2320808$$

$$\frac{17.719}{17.719} = 1.2484577$$

$$\frac{51.15.38.10}{10} = 9.4469835$$

$$\frac{10}{10} = 1.0000000$$

$$\frac{2.7989}{2.7989} = 0.4469835$$

$$\frac{20.15.38.10}{20.15.38.10} = 9.9836231$$

$$\frac{6.5}{6.5} = 0.8129134$$

$$\frac{6.5}{6.5} = 0.7965365$$

$$\frac{5.15.37.10}{9.4469835} = 1.7520$$

$$\frac{1.7520}{1.7520} = 0.2435200$$

$$\frac{20.15.38.10}{20.15.38.10} = 9.9814357$$

$$\frac{2.375}{2.375} = 0.3756636$$

$$\frac{2.275}{2.275} = 0.3570993$$

$$\frac{5.15.38.01}{5.15.38.01} = 9.4753106$$

$$\frac{6.7984}{6.7984} = 9.8324099$$

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51st & Supplee Sts

61.24	88.02	57.50	24.97	47.18	26.54
00.720	02.08	01.75-	02.90	24.97	04.46
56.09	83.98	56.05	22.07	22.21	22.08
56.05					
57.95					
3/168.12					
56.64 - (1)					
		56.09-1		55.19	18.00
		22.21-2		00.79	03.60
		54.40-3		54.40	84.40
		132.78			
		400000			
	43520	15308000.8		121.9	
		13560			
		95200			
		87120			
		80800			
		43560			
		372400			

123 Acres

84.40	84.12	83.22	51.8
02.86	02.37	01.47	50000
51.84	51.75	51.71 23560	2072000.00

17

234

507

$$\begin{array}{r}
 4430 \\
 700 \\
 \hline
 13300 / 301000
 \end{array}
 \quad
 \begin{array}{r}
 7 A.c. \\
 (7 A.c.) \\
 4430 \\
 110 \\
 \hline
 22300 \\
 \times 5 \\
 \hline
 67500
 \end{array}
 \quad
 \begin{array}{r}
 310 \\
 800 \\
 \hline
 280000
 \end{array}
 \quad
 \begin{array}{r}
 48 A.c. - \\
 507 \\
 64
 \end{array}$$

10 ft. velocity

5.5	3.1416	3.1416
5.5	30.25	25
37.5		
37.5	157000	157000
37.5	62832	62832
30.25	94248	785400
		719
	95033400	7065
		765

116	4.16	3.1416	4.28
25	4.16	20.25	4.16
80	22.5	172000	2125
2	180	62832	800
100	20.25	62832	1700
			180625
		63617400	18062
		19	31416
	57249		108372
	4361		18062

22562	1
31416	
<u>135372</u>	70.88
22562	19
90248	
22562	63792
67686	7088
708807792	134672

86.74 120.8.1.9 72.22.8
20 180.62
113.4.00 54.18.6
56.74 35.79.2
19
520.66
567.4

2026

0.170

3/22/95

44-23
4288

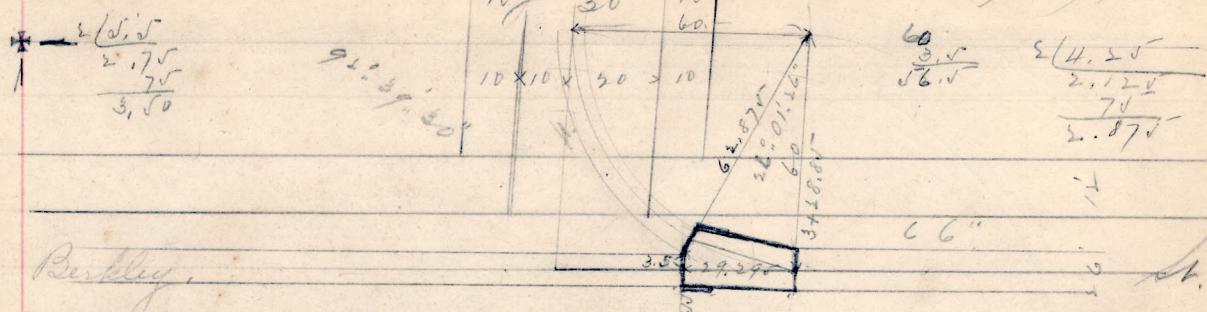
Cal. for Liver from Berkley St. cream + Broad + Courtland

100
 81.306
 138.575
 389.974
 220.167
 10.011
 45.832
 10.091
 286.101
 1.161
 284.940
 148.202
 136.1738
 216
 30.033
 422.771
 195.443
 618.214
 400.117
 56.042
 461.542 Nah J. 20° 39° 30° = 0.0464
 21.568
 439.974
 5.046
 434.928
 28.692
 463.620
 7.046
 486.186
 3.443
 453.137
 38.069
 418.068
 148.102
 269.866
 618.214
 888.080
 63.472
 951.552
 210.761
 1162.513
 1188.313
 419.667
 1607.980
 26
 1633.98
 419.667
 2053.647
 26
 2079.647
 419.667
 2499.314
 2455.314
 94.441
 2549.562
 427
 2976.562
 2974.245
 3070.810
 369.667
 3440.477
 26
 2466.477
 419.667
 3886.144
 26
 3912.144
 13
 3899.144
 60
 3959.144
 31.152
 3927.992
 313.770
 4241.762
 31.152
 4272.914
 68.897
 4341.511

C. 20° 39° 30° = 0.0004676
 10.011 1.00000000
 21.568 = 1.0004676
 C. 21° 38° 30° = 0.03277784
 30 = 1.4771213
 22.351 = 1.6098967
 518.59 = 0.1708536
 100 = 2
 148.202 = 2.1708536
 C. 21° 38° 30° = 0.03277784
 22.351 = 1.6283889
 45.832 = 1.6611643
 const. = 4.6807749
 9-100 = 2.00000000
 403.921 = 0.6054462
 195.443 2,2910211
 21.568
 439.974
 5.046
 434.928
 28.692
 463.620
 7.046
 486.186
 3.443
 453.137
 38.069
 418.068
 148.102
 269.866
 618.214
 888.080
 63.472
 951.552
 210.761
 1162.513
 1188.313
 419.667
 1607.980
 26
 1633.98
 419.667
 2053.647
 26
 2079.647
 419.667
 2499.314
 2455.314
 94.441
 2549.562
 427
 2976.562
 2974.245
 3070.810
 369.667
 3440.477
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 2466.477
 419.667
 3886.144
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 3912.144
 13
 3899.144
 60
 3959.144
 31.152
 3927.992
 313.770
 4241.762
 31.152
 4272.914
 68.897
 4341.511

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 (6.8.01.19
 248.01.09
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 58.89.25
 111.05.01
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 666.0
 30.033
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 4030.80
 4031.51
 0.1708536
 60 = 1.7781513
 88.921 1.9490029
 226.185
 22.210
 203.925
 226.185
 20.085
 12.000
 258.220
 12.39
 245.830
 35.069
 210.761
 39.667
 26
 419.667

Chamber at Berkley + Green Sts. 3/23/92



2(92° 39' 30")
46.19.40"

4.175
✓175

$$\begin{array}{l} 2.175 \\ 2.875 \\ \hline 62.875 = 8.3010220 \\ 8.175 = 1.7520484 \\ 26.0.01.26" = 9.9535704 \\ 5.26.01.26" = 9.6886412 \\ 60 = 1.7781513 \\ 29.895 = 1.4667925 \end{array}$$

$$\begin{array}{l} 4.16.19.40" = 0.0201071 \\ 60 = 1.7781513 \\ 62.850 = 1.7983084 \end{array}$$

$$29.895 = 8.5332075$$

$$0.0.0. = 9.6989700$$

$$00.0.0.40" = 8.2321775$$

$$\text{Co. } 9.0.0.37" = 0.0060012$$

$$\begin{array}{l} 2.75 29.295 \text{Co. } 00.0.58.40 = 0.00000632 \\ 75 2.194 \\ 4.493 27.101 \\ 7.993 29.295 = 1.4667925 \\ 3.250 2.75 \\ 4.743 2.174 \\ 6.084 4.493 \\ 7.993 2.6.0.01.26" = 9.6886412 \\ 3.70 2.1907 \\ 10.743 28.034 \end{array}$$

$$10 = 1 \quad 10.102 = 1.000000000000000$$

$$5.9.0.37" = 9.2430678$$

$$10 = 1 \quad 17.001 = 0.8430678$$

$$0.9.0.37" = 0.0060012$$

$$27.101 = 1.4329853$$

$$27.513 = 1.4395368$$

$$27.101 = 8.5670147$$

$$\begin{array}{l} 2.75 4.1745 = 0.6760531 \\ 75 9.0.0.37" = 9.2430678 \end{array}$$

$$6.0.84 \quad \text{Co. } 26.0.01.26" = 9.9535704$$

$$2.7703 2.675 = 0.4586378$$

$$4.3406 2.5005 = 0.4122082$$

$$10.232 26.686 \\ 20.0.64 20.464 \\ 28.0.34 8.222$$

$$7.570 10.743 = 8.9688744$$

$$2.194 = 0.3411816$$

$$11.0.32.28" = 9.310.0560$$

$$0.0.0.0 0.0.0.8708$$

$$2.17 10.743 = 1.0311206$$

$$6.750 10.966 = 1.0599964$$

$$2.4.09 26.0.24 = 8.5023149$$

$$6.0.84 = 0.7841892$$

$$12.0.14.40" = 9.33656041$$

$$\text{Co. } 12.0.14.40 = 0.0099936$$

$$28.0.34 = 1.4476857$$

$$28.6.66 = 1.4576787$$

$$4.12.0.14.40" = 0.0099936$$

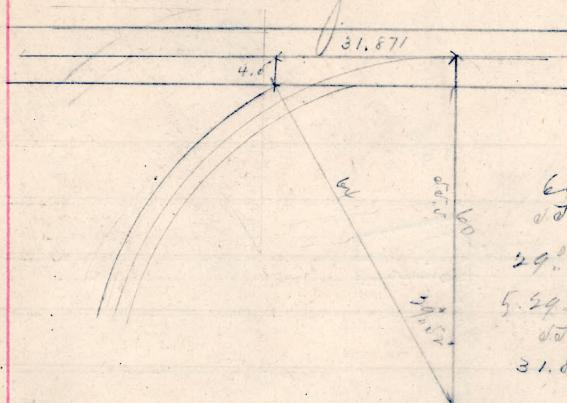
$$10 = 1 \quad 10.232 = 1.0099936$$

$$15.02.0.14.40" = 9.33656041$$

$$10 = 1 \quad 2.1703 = 0.33656041$$

16
6
145.78
78
115P4 3
73
704

Calculation of Chamber at 15° & Courtland Sts



$$\begin{array}{r}
 3.78 \\
 78 \\
 \hline
 4.070 \\
 3.922 \\
 079 \\
 3.843 \\
 \hline
 10.214 \\
 30.364 \\
 29.009 \\
 8.491
 \end{array}$$

$$\begin{array}{r}
 6.4 = 8.1938200 \\
 6.4 = 1.7442930 \\
 29.02 = 9.9381130
 \end{array}$$

$$\begin{array}{r}
 5.39.52 = 9.7091022 \\
 5.39.52 = 1.7442930 \\
 31.871 = 1.033952
 \end{array}$$

$$\begin{array}{r}
 10.349 \\
 20.698 \\
 30.923 \\
 \hline
 10.220
 \end{array}$$

$$\begin{array}{r}
 31.871 \\
 1.992 \\
 29.879 \\
 \hline
 2.667 \\
 1.334 \\
 8.6 \\
 3.466
 \end{array}$$

$$\begin{array}{r}
 31.871 \\
 3.614 \\
 28.257
 \end{array}$$

$$\begin{array}{r}
 4. \\
 2.4 \\
 10.781 \\
 4 \\
 6.781
 \end{array}$$

$$\begin{array}{r}
 3.78 \\
 78 \\
 3.469 \\
 7.969
 \end{array}$$

$$\begin{array}{r}
 3.24 \\
 70 \\
 4.00
 \end{array}$$

$$\begin{array}{r}
 4.375 \\
 6.25 = 9.3979400 \\
 31.871 = 1.033952 \\
 0.26.58 = 7.8945448 \\
 10 = 1.0000000 \\
 0.0784 = 8.8945448
 \end{array}$$

$$\begin{array}{r}
 28.257 = 8.0488739 \\
 6.781 = 0.8313937
 \end{array}$$

$$13.29.40 = 9.3801676$$

$$\begin{array}{r}
 0.13.29.40 = 0.0121074 \\
 28.257 = 1.4511261 \\
 29.009 = 1.4633845
 \end{array}$$

$$\begin{array}{r}
 0.13.29.40 = 0.0121074 \\
 10 = 1 \\
 10.24 = 1.0121074
 \end{array}$$

$$5.13.29.40 = 9.3801676$$

$$\begin{array}{r}
 10 = 1 \\
 2.3997 = 0.3801676
 \end{array}$$

$$\begin{array}{r}
 0.29.52 = 9.9381130 \\
 4 = 0.6020600
 \end{array}$$

$$\begin{array}{r}
 3.4664 = 0.5401730 \\
 1.29.02 = 9.7091022 \\
 1.9919 = 0.2992752
 \end{array}$$

$$\begin{array}{r}
 29.879 = 8.0488339 \\
 7.969 = 0.9014038
 \end{array}$$

$$14.26.02 = 9.4260377$$

$$\begin{array}{r}
 0.14.26.02 = 0.0149222 \\
 29.879 = 1.4753661
 \end{array}$$

$$\begin{array}{r}
 30.923 = 1.4902883 \\
 10 = 1 \\
 10.349 = 1.0149222
 \end{array}$$

$$\begin{array}{r}
 0.14.26.02 = 0.0149222 \\
 10 = 1 \\
 10.349 = 1.0149222
 \end{array}$$

$$5.14.26.02 = 9.4260377$$

$$\begin{array}{r}
 10 = 1 \\
 2.667 = 0.4260377
 \end{array}$$

8/23/93 -

Loyalville Run ²⁹
Assumption Ave & E

Separating Chamber at

$$8 = 9.0969100$$

$$\begin{array}{r} 0.18.129 \\ 24.017 \\ \hline .008 \\ \hline 1.585 \end{array}$$

$$A. 139$$

$$\begin{array}{r} 28.139 \\ 4.069 \\ \hline \end{array}$$

$$1.5 = 0.1760913$$

$$16.278$$

$$11.521$$

$$10^{\circ} 37' 11" = 9.2730013$$

$$2.17.803$$

$$20. 10^{\circ} 37' 11" = 0.0075027$$

$$8.901$$

$$8 = 0.9030900$$

$$4.069$$

$$8.1394 0.9105927$$

$$4.882$$

$$4.882 = 9.3158731$$

$$2 = 0.3010300$$

$$32^{\circ} 29' 06" = 9.6169031$$

$$0.52296 = 0.0343375$$

$$4.069 = 0.6841269$$

$$\underline{0.52296} \quad 0.7184644$$

$$20. 32^{\circ} 29' 06" = 9.9646624$$

$$4.069 = 0.6094877$$

$$\underline{3.7197} \quad 0.5751502$$

$$17.32^{\circ} 29' 06" \quad 9.6169031$$

$$\underline{1.8862} \quad 0.1920533$$

Garfield St. Survey

$$\begin{array}{r} 129.083 \\ 125.47 \\ \hline 4.613 \end{array}$$

106.287

$$\begin{array}{r} 90^{\circ} \\ 129.083 \\ 129.083 \\ \hline 0^{\circ} \end{array}$$

90° 13.11'

$$\begin{array}{r} 92^{\circ} 16' \\ 125.47 \\ \hline 92^{\circ} 16' \end{array}$$

$$\begin{array}{r} 106.287 = 7.9735799 \\ 4.613 = 0.6639835 \\ \hline 2.39.10" = 8.6375034 \end{array}$$

$$\begin{array}{r} 92^{\circ} 16' \\ 87.114 \\ 2.29.10 \\ \hline 90.13.11 \end{array}$$

131.42

3.73

$$\begin{array}{r} 90^{\circ} \\ 6^{\circ} 3^{\circ} 1^{\circ} 1^{\circ} \\ \hline 229.678 \\ 0^{\circ} \end{array}$$

$$\begin{array}{r} 229.678 \\ 225.945 \\ \hline 3.730 \end{array}$$

$$\begin{array}{r} 131.42 = 7.8813385 \\ 3.73 = 0.5717085 \\ \hline 1.37.35 = 8.4530473 \end{array}$$

$$\begin{array}{r} 88^{\circ} 22^{\circ} 25' \\ 2.16 \\ \hline 90.38.25 \end{array}$$

300.728

40.08

$$\begin{array}{r} 300.728 \\ 300.56 \\ \hline 16 \end{array}$$

$$\begin{array}{r} 40.08 = 8.3970723 \\ 0.168 = 9.2253093 \\ \hline 02.14.25 = 7.6223816 \end{array}$$

$$\begin{array}{r} 17.47.30 \\ 90 \\ 1.45.14 \\ \hline 10.9.33.24 \end{array}$$

$$\begin{array}{r} 88^{\circ} 14.06 \\ 1.67 \\ \hline 90.11.66 \end{array}$$

$$\begin{array}{r} 29.96 \\ 59^{\circ} 12' 49" \\ \hline 136.000 \\ 136.000 \\ \hline 136.000 \end{array}$$

$$\begin{array}{r} 136.052 \\ 124.822 \\ \hline 1.230 \end{array}$$

$$\begin{array}{r} 29.96 = 8.5234582 \\ 1.23 = 0.0899051 \\ \hline 2.31.11 = 8.6133633 \end{array}$$

$$\begin{array}{r} 160 \\ 57.47.30 \\ \hline 72.13.30 \end{array}$$

$$\begin{array}{r} 20 \\ 2.11.30 \\ \hline 17.47.30 \end{array}$$

$$\begin{array}{r} 13.43 \\ 6.131 \\ \hline 19.163 \end{array}$$

$$\begin{array}{r} 29.96 \\ 59^{\circ} 12' 49" \\ \hline 136.000 \\ 136.000 \\ \hline 136.000 \end{array}$$

Lin. Ave

$$\begin{array}{r} 95^{\circ} 14' \\ 2.21.11 \\ \hline 89.52.49 \end{array}$$

$$\begin{array}{r} 160 \\ 57.47.30 \\ \hline 72.13.30 \end{array}$$

$$\begin{array}{r} 20 \\ 2.11.30 \\ \hline 17.47.30 \end{array}$$

$$\begin{array}{r} 13.43 \\ 6.131 \\ \hline 19.163 \end{array}$$

227.906

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15.035

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277.963

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227.906

227.998

90°

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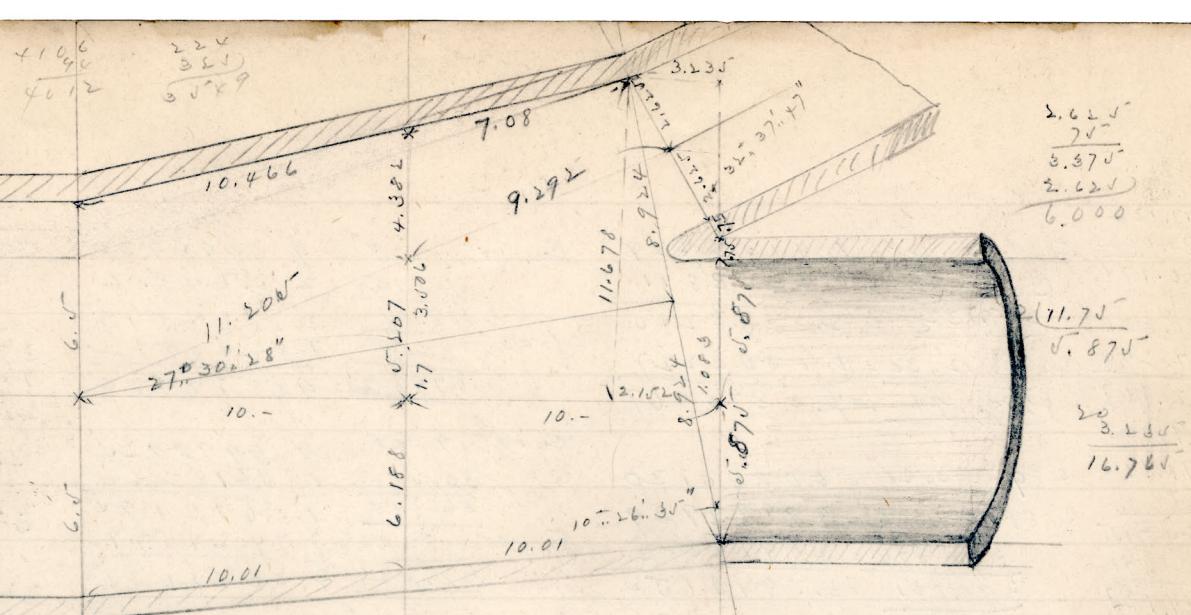
17.3.12.20

17.3.12.20

5.

217.132	
173.042	$\frac{173.042}{390.174} = 0.4388429$
390.174	$\frac{6.373}{8.373} = 0.9228811$
390.001	$\frac{217.132}{217.132} = 2.3367240$
217.294	$\frac{0.217.294}{0.217.294} = 0.0003227$
172.707	$\frac{217.294}{217.294} = 2.3370467$
19.008	
191.715	$\frac{5.89}{5.89} = 0.0000130$
7	
184.715	$\frac{5.88}{5.88} = 9.9997939$
575	$\frac{390.174}{390.001} = 2.5912583$
184.137	$\frac{390.001}{390.001} = 2.5910652$
116	
184.253	$\frac{5.89}{5.89} = 0.0000130$
5. 1 ¹ , 12 ¹ , 30 ¹	$= 8.5858345$
40.024	$\frac{390.174}{15.035} = 2.5912583$
5.692	$= 1.1771058$
45.916	
10.409	
30.509	$\frac{0.001.17.10}{0.001.17.10} = 0.0002516$
173.062	$\frac{40}{40} = 1.6020600$
1.093	$\frac{40.024}{40.024} = 1.6023116$
174.155	$\frac{5.1}{5.1} = 8.0320797$
305.679	$\frac{40}{40} = 1.6020600$
131.524	$1.3619 = 0.1341397$
20	
15.072	$\frac{6.9}{6.9} = 8.0320797$
4.498	$\frac{305.679}{10.407} = 2.4802668$
131.524	$= 1.0173453$
475	
132.002	$\frac{5.1}{5.1} = 8.0320797$
0.084	$\frac{173.062}{173.062} = 2.2382017$
131.918	$\frac{5.89}{5.89} = 0.7702814$
31.179	
30.231	$\frac{0.001.17.10}{0.001.17.10} = 9.9999962$
61.410	$\frac{20}{20} = 1.3010300$
184.253	$\frac{20.000}{5.00} = 1.3010262$
122.843	$\frac{5.00}{5.00} = 7.6220935$
108.714	$\frac{.083872}{.083872} = 8.9236497$
281.557	
47.385	$\frac{0.17.10}{0.17.10} = 9.9997939$
328.912	$\frac{15.079}{15.079} = 1.1905838$
217.574	$\frac{15.079}{15.079} = 1.1903777$
546.486	$\frac{5.1}{5.1} = 8.4887895$
47.12	$\frac{0.477689}{0.477689} = 9.6791372$
593.706	$131.918 = 7.8796960$
70.981	$4.498 = 0.6130195$
664.687	$1.57.10 = 8.0327155$
48.019	
712.706	$\frac{0.17.10}{0.17.10} = 0.0002523$
30	$131.918 = 2.1203040$
742.706	$131.995 = 2.1205563$
134.043	
876.749	$\frac{6.9}{6.9} = 8.0783433$
8.808	$\frac{2.2464117}{8.808} = 2.3464117$
36.444	$\frac{8.808}{8.808} = 0.9447850$
876.749	
80.130	$\frac{1.211.457}{1.211.457} = 9.6768686$
956.879	$103.6 = 2.1863912$
12.551	$72.989 = 1.8632598$
1082.429	1211.457
46.789	1321.457
1129.518	121.065
31	1342.522
1164.218	39.159
47.1239	1381.681
1211.457	

co. 00. 00. 14. 29	$= 9.9999961$	333.219
$\frac{113.09}{113.09}$	$= 2.0564856$	36.444
$\frac{113.89}{5.00}$	$= 2.0564817$	1.227
$\frac{5.00}{5.00}$	$= 7.6248972$	222.03
$\frac{47982}{47982}$	$= 9.6810789$	201
co. 00. 19. 00	$= 9.9999934$	370.89024829
$\frac{36.444}{36.444}$	$= 1.5616260$	113.89
$\frac{36.444}{5.00}$	$= 1.5616194$	257.000
$\frac{20142}{20142}$	$= 9.3041035$	305.679
co. 00. 19. 00	$= 9.9999934$	306.159
$\frac{322.03}{322.03}$	$= 2.3464117$	221.829
$\frac{322.03}{5.00}$	$= 2.3464051$	4.295
$\frac{5.00}{5.00}$	$= 7.7424841$	226.122
$\frac{1.2271}{1.2271}$	$= 0.0888898$	306.159
co. 00. 00. 00. 00	$= 0.00000606$	257.000
$\frac{257.00}{257.00}$	$= 2.4999331$	188.326
$\frac{257.00}{257.00}$	$= 2.4099927$	106.35
$\frac{15.00}{15.00}$	$= 8.2228045$	72.919
$\frac{257.00}{257.00}$	$= 2.40999331$	32.361
$\frac{42927}{42927}$	$= 0.6327376$	221.829
$\frac{5.48.46.10}{5.48.46.10}$	$= 0.1238242$	5.875
$\frac{5.89.02.35}{5.89.02.35}$	$= 9.9999394$	215.954
$\frac{80.03}{80.03}$	$= 1.9032908$	306.159
$\frac{106.35}{106.35}$	$= 2.0267544$	90.205
$\frac{5.48.46.10}{5.48.46.10}$	$= 0.1238242$	257.000
$\frac{5.40.14.25}{5.40.14.25}$	$= 9.8102288$	74.909
$\frac{80.03}{80.03}$	$= 1.9232904$	182.158
$\frac{68.714}{68.714}$	$= 1.8370438$	198.158
co. 1. 1. 18. 35	$= 0.0001135$	118.93
$\frac{257}{257}$	$= 2.40999331$	72.919
$\frac{257.067}{257.067}$	$= 2.4100466$	42.941
$\frac{5.1.1.18.05}{5.1.1.18.05}$	$= 8.3071322$	251.104.10
$\frac{257}{257}$	$= 2.40999331$	251.104.10
$\frac{5.37.05}{5.37.05}$	$= 0.7690653$	251.104.10
$\frac{5.1.1.18.05}{5.1.1.18.05}$	$= 0.1090717$	29.667
$\frac{6.86.41.25}{6.86.41.25}$	$= 9.9998865$	42.941
$\frac{90.205}{90.205}$	$= 1.9052306$	72.608
$\frac{110.93}{110.93}$	$= 2.0641888$	198.158
$\frac{5.1.1.18.05}{5.1.1.18.05}$	$= 0.1090717$	222.664
$\frac{5.40.14.25}{5.40.14.25}$	$= 9.8102288$	128.158
$\frac{90.205}{90.205}$	$= 1.9152306$	633
$\frac{74.909}{74.909}$	$= 1.8745311$	127.886
$\frac{5.28.32.05}{5.28.32.05}$	$= 0.3208269$	222.664
$\frac{42.941}{42.941}$	$= 1.6228722$	94.778
$\frac{89.888}{89.888}$	$= 1.9536991$	39.778
co. 2. 1. 16	$= 0.0003399$	35.100
$\frac{522.03}{522.03}$	$= 2.3464117$	061
$\frac{222.21}{222.21}$	$= 2.3467516$	127.886
co. 2. 1. 16	$= 0.0003399$	
$\frac{126.48}{126.48}$	$= 2.1088355$	
$\frac{128.58}{128.58}$	$= 2.1091754$	



$$\begin{aligned}
 \text{Co. } 32^{\circ} 37' 47'' &= 9.9254012 \\
 3.375 &= 0.3752738 \\
 \underline{2.8423} &= 0.4536750 \\
 \underline{5.32^{\circ} 37' 47''} &= 9.8063549 \\
 \underline{1.8198} &= 0.2600299
 \end{aligned}$$

$$\begin{aligned}
 18.18 &= 8.7404061 \\
 9.092 &= 0.9586174 \\
 26^{\circ} 34' 12'' &= 9.6990655
 \end{aligned}$$

$$\begin{aligned}
 \text{Co. } 36^{\circ} 34' 12'' &= 0.0484788 \\
 10 &= 1 \\
 \underline{11.181} &= 1.0484788
 \end{aligned}$$

$$\begin{aligned}
 15^{\circ} 26' 34' 12'' &= 9.6990655 \\
 10 &= 1 \\
 \underline{0.0011} &= 0.6990655
 \end{aligned}$$

$$\begin{aligned}
 \text{Co. } 26^{\circ} 34' 12'' &= 0.0484738 \\
 18.18 &= 1.2595939 \\
 \underline{20.326} &= 1.3080677
 \end{aligned}$$

$$\begin{aligned}
 \text{Co. } 32^{\circ} 37' 47'' &= 9.9254012 \\
 \underline{6} &= 0.7781513 \\
 \underline{5.0031} &= 0.7035525 \\
 \underline{5.32^{\circ} 37' 47''} &= 9.8063549 \\
 \underline{3.235} &= 0.45099074
 \end{aligned}$$

$$\begin{aligned}
 18.18 &= 8.7404061 \\
 9.467 &= 0.9762124 \\
 27^{\circ} 30' 28'' &= 9.7166185
 \end{aligned}$$

$$\begin{aligned}
 \text{Co. } 27^{\circ} 30' 28'' &= 0.0521018 \\
 18.18 &= 1.2595939 \\
 \underline{20.497} &= 1.3116957
 \end{aligned}$$

$$\begin{aligned}
 \text{Co. } 27^{\circ} 30' 28'' &= 0.0521018 \\
 \underline{10} &= 1 \\
 \underline{11.205} &= 1.0521018
 \end{aligned}$$

$$\begin{aligned}
 1.27^{\circ} 30' 28'' &= 9.7166185 \\
 \underline{10} &= 1 \\
 \underline{5.2073} &= 0.7166185
 \end{aligned}$$

$$\begin{aligned}
 17.073 &= 8.7076486 \\
 3.235 &= 0.5099074 \\
 10^{\circ} 26' 35'' &= 9.2655560
 \end{aligned}$$

$$\begin{aligned}
 \text{Co. } 10^{\circ} 16' 35'' &= 0.0072541 \\
 17.073 &= 1.2443514 \\
 \underline{17.848} &= 1.2516000
 \end{aligned}$$

$$\begin{aligned}
 20 &= 1.82 \\
 18.18 &= 1.142 \\
 20.326 &= 9.092 \\
 11.181 &= 5.875 \\
 9.140 &= 2.842 \\
 20.497 &= 9.467 \\
 11.205 &= 11.75 \\
 9.292 &= 5.053 \\
 17.073 &= 7.080 \\
 10.466 &= 17.046 \\
 10.466 &= 7.080 \\
 6.188 &= 3.089 \\
 5.207 &= 9.589 \\
 4.382 &= 5.207 \\
 15.777 &= 4.382 \\
 7.688 &= 6.188 \\
 6.188 &= 1.1700 \\
 7.888 &= 4.382 \\
 4.382 &= 3.089 \\
 1.1700 &= 7.888 \\
 17.046 &= 1.24441766 \\
 1.24441766 &= 8.924 \\
 17.046 &= 1.0197730 \\
 1.0197730 &= 17.046 \\
 1.0197730 &= 1.0197730 \\
 1.0197730 &= 0.4697584 \\
 0.4697584 &= 1.0197730 \\
 1.0197730 &= 1.0197730
 \end{aligned}$$

W W W W M M M

Ameasaka Creek Sewer 12/30/92

$$\frac{39/30.0}{273} (.77)$$

$$\theta = \text{recta}$$

$$\frac{1090}{186} \quad 904$$

$$3 \times .7 \sqrt{\frac{30}{904}}$$

$$\sqrt{0.4772} = 2.34$$

$$+3 \sqrt{147} \quad 129$$

$$\sqrt{30.0666} = 5.48$$

$$\frac{104}{108} \sqrt{416} \quad 90466$$

$$\theta = 2.25 \times \frac{2.34}{5.48}$$

$$\frac{2.34}{2.25}$$

$$\frac{1170}{1170}$$

$$\begin{array}{r} .942 \\ 904 \\ 3768 \\ \hline 84780 \\ 881.568 \end{array}$$

$$\begin{array}{r} 468 \\ 468 \\ \hline 0.48 \sqrt{5.2650} \quad (.942) \\ \hline 1032 \\ 2330 \\ 2192 \\ \hline 1380 \end{array}$$

$$\underline{Q = 881.568}$$

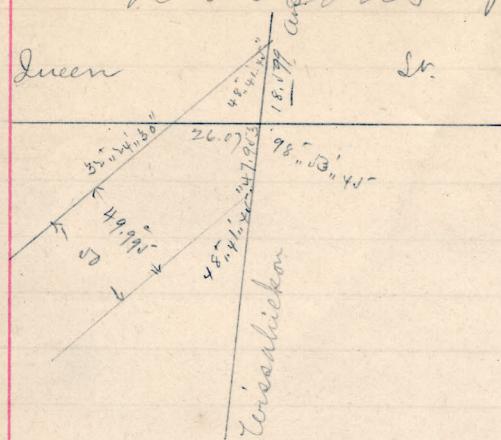
$$\underline{8'9" \text{ sewer} \cdot 0.77 \text{ grade} = 14.7 \text{ velocity}}$$

$$\text{area of } 8'9" \text{ sewer} = \frac{60.132}{14.7}$$

$$\begin{array}{r} 420924 \\ 240528 \\ \hline 60132 \end{array}$$

$$\underline{8'9" \text{ sewer capacity with } 0.77 \text{ per 100 grade} = \frac{883.9404}{14.7} \text{ cfs.}}$$

Dobson's Run Silver January 1793



$$5.48 \pm 41.45'' = 0.124 \pm 3.170$$

5.32° 4' 30" = 9.729 1239

$$\underline{26.07} = \underline{1.416} \quad 1410$$

$$\underline{18.599} = 1.8694999$$

$$5.48 \times 41.45'' = 9.875 - 76.50$$

$$\frac{66.572}{1.127} = \frac{1.8231611}{1.1989311}$$

$$\underline{49.995} - 1.6989261$$

12.50

Wolf St. Sewer January 24-1893

EFG

HIJ

43560

KL

$$\begin{array}{r}
 54.24 \\
 82.60 \\
 \hline
 57.64 \\
 40000
 \end{array}$$

$$\begin{array}{r}
 55.29 \\
 04.00 \\
 \hline
 51.29 \\
 40000
 \end{array}$$

205 160000

$$\begin{array}{r}
 24.50 \\
 04.50 \\
 \hline
 20 \\
 40000
 \end{array}$$

43560/500000 (19)

$$\begin{array}{r}
 19. \\
 48 \\
 \hline
 67 \\
 40 \\
 \hline
 63 \\
 190 \\
 80 \\
 \hline
 218 \\
 32 \\
 \hline
 33 \\
 19 \\
 \hline
 394
 \end{array}$$

$$\begin{array}{r}
 46.21 \\
 02.79 \\
 \hline
 43.42 \\
 40000
 \end{array}$$

43560/12420000 (40)

$$\begin{array}{r}
 3043 \\
 32125 \\
 25168 \\
 \hline
 6000 \\
 19168 \\
 \hline
 10000 \\
 9168
 \end{array}$$

$$\begin{array}{r}
 76.72 \\
 30.10 \\
 46.62 \\
 \hline
 22125 \\
 26787 \\
 \hline
 20000 \\
 67.87 \\
 \hline
 43560/2714800.00 \\
 261360
 \end{array}$$

(63)

101200

$$\begin{array}{r}
 38.67 \\
 02.69 \\
 \hline
 55.98 \\
 34.73 \\
 \hline
 90.71 \\
 43560/3667200.00 \\
 345480
 \end{array}$$

91.68

40000

182400

174200

816.0

$$\begin{array}{r}
 5905 \\
 22125 \\
 \hline
 28030 \\
 9150 \\
 \hline
 18930 \\
 10000 \\
 \hline
 89.28
 \end{array}$$

$$\begin{array}{r}
 40.00 \\
 00.50 \\
 \hline
 39.90 \\
 43560/3572000.00 \\
 345480
 \end{array}$$

89.30

40000

182400

174200

87200

$$\begin{array}{r}
 3119 \\
 32125 \\
 \hline
 25244 \\
 9073 \\
 \hline
 16171 \\
 10000 \\
 \hline
 6171
 \end{array}$$

$$\begin{array}{r}
 63.67 \\
 02.14 \\
 \hline
 61.53 \\
 43560/2468200.00 \\
 217800
 \end{array}$$

61.71

40000

217800

290000

$$g = \text{rect} \frac{a}{a} = 3 \times 75 \sqrt{\frac{2}{394}} = 2.25 \sqrt{\frac{1.4142}{19.8494}} = 2.25 \times \frac{1.189}{4 \cdot 4 \sqrt{2}} = 2.25 \times 267$$

$$\begin{array}{r}
 4.4 \sqrt{1.18900} \\
 8910 \\
 \hline
 29800 \\
 32730 \\
 \hline
 307000
 \end{array}$$

$$\begin{array}{r}
 2.25 \\
 .267 \\
 \hline
 1575 \\
 1350 \\
 \hline
 450 \\
 60075 \\
 \hline
 5364
 \end{array}$$

0.6007 = 0

$$4 \cdot 4 \sqrt{1.18900} - 0.6007 = 0.6007 \times 1.14 = 0.6007 \times 0.374$$

$$7' 6" Air 36.485 \quad 36.485$$

$$7' grade. 044 \text{ ft/100} = 3 \text{ ft.} \quad 11.5455$$

$$7' 3" Sewer 41.212 \quad \frac{41.212}{123.846}$$

7' 6" Town Sewer for outlet

$$\begin{array}{r}
 9' 6" = 70.88 \\
 31 \\
 \hline
 35440 \\
 21264 \\
 \hline
 248.080
 \end{array}$$

$$\begin{array}{r}
 9' 3" = 67.4 \\
 3 \\
 \hline
 3800 \\
 2016 \\
 \hline
 23820
 \end{array}$$

247

$$Q = ncv \sqrt{\frac{C}{a}} = 3 \times 2.25 \sqrt{\frac{1.4142}{337}} = 2.25 \sqrt{\frac{1.4142}{18.3576}} = 2.25 \times \frac{1.189}{4.281} = 2.25 \times 0.277 = 0.6233$$

$$\begin{array}{r}
 4.285/1.1890 \\
 \underline{8.170} \\
 33200 \\
 39995 \\
 \underline{3205} \\
 \end{array}
 \begin{array}{r}
 1.277 \\
 \underline{2.25} \\
 1575 \\
 1575 \\
 \underline{450} \\
 63325 \\
 \end{array}
 \begin{array}{r}
 6233 \\
 \underline{337} \\
 43631 \\
 18699 \\
 \underline{10699} \\
 31020521
 \end{array}$$

7' sewer $\frac{116.4}{230.8}$ ~~7' 3" sewer from Front & Uccaco Ave~~

$$Q = ncv \sqrt{\frac{C}{a}} = 3 \times 2.25 \sqrt{\frac{1.4142}{230.8}} = 2.25 \sqrt{\frac{1.4142}{16.9687}} = 2.25 \times \frac{1.189}{3.996} = 2.25 \times 0.3 = 0.675$$

$$\begin{array}{r}
 3.996/1.1890 \\
 \underline{11.988} \\
 13 \\
 \underline{6.75} \\
 \end{array}
 \begin{array}{r}
 675 \\
 \underline{3375} \\
 3375 \\
 \underline{1350} \\
 172425
 \end{array}
 \begin{array}{r}
 \underline{6.3.02} \\
 189.06
 \end{array}$$

$$6'9" = 35.78 \frac{2.25}{178.90} \frac{1.189}{71.56} \frac{17.2425}{89.450}$$

$$Q = ncv \sqrt{\frac{C}{a}} = 3 \times 2.25 \sqrt{\frac{1.4142}{170}} = 2.25 \sqrt{\frac{1.4142}{13.0364}} = 2.25 \times \frac{1.189}{3.618} = 2.25 \times 0.328 = 0.738$$

$$\begin{array}{r}
 3.618/1.1890 \\
 \underline{10.854} \\
 13 \\
 \underline{7.236} \\
 31240
 \end{array}
 \begin{array}{r}
 738 \\
 \underline{170} \\
 738 \\
 \underline{125.460}
 \end{array}$$

$$7' 6" \text{ sewer} = \frac{44.179}{132.537}$$

6' sewer $\frac{10}{10}$ ft West

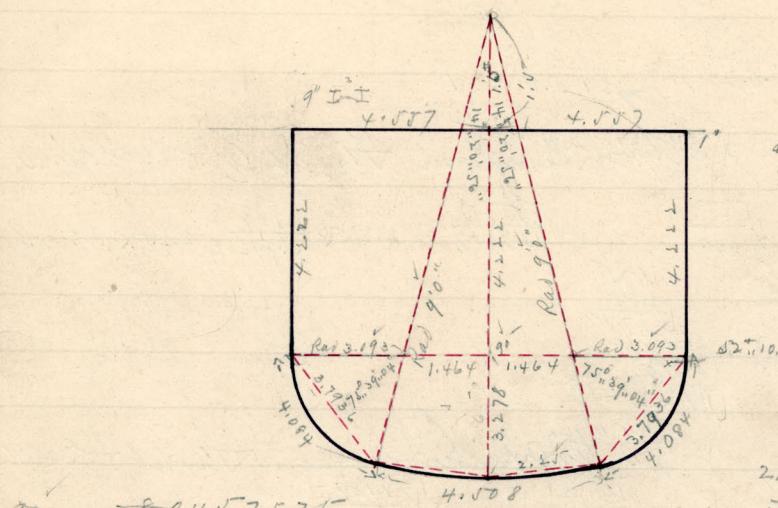
7' 9" sewer for 6th & 10th Sts.

See Book 3

Page 37

1/27/93

Wolf St. Sewer Calculation of dimensions of Cross Section



$$90 = 8.0457575$$

$$92.25 = 1.9649664$$

$$87.75 = 1.9432471$$

$$\underline{89.945 = 1.9539710}$$

$$2.25 = 9.6478175$$

$$0.25 = 8.4471580$$

$$\underline{0.42147 = 8.2949755}$$

$$3.454547 = 0.1451767$$

$$5.883426 = 9.9996605$$

$$3.093 = 0.4903799$$

$$\underline{4.0194 = 0.6354221}$$

$$9 = -9.0457575$$

$$11.25 = 1.0511525$$

$$6.75 = 0.18293038$$

$$\underline{8.4375 = 0.9262138}$$

$$2.25 = 9.6478175$$

$$0.25 = 9.4487063$$

$$\underline{7.10728 = 9.0965338}$$

$$5.1310128 = 0.1024321$$

$$5.783904 = 9.9862362$$

$$3.093 = 0.4903799$$

$$3.7936 = 0.5790542$$

$$1.308997$$

$$0.011344$$

$$\underline{0.000019}$$

$$1.320360$$

$$3.093$$

$$3.96108$$

$$11.88324$$

$$3.96108$$

$$4.08387348$$

$$cos. 37^{\circ} 49' 32'' = 9.8978719$$

$$3.794 = 0.5790973$$

$$\underline{2.9968 = 0.4766592}$$

$$5.14720'56'' = 9.4079101$$

$$5.722 = 0.7575479$$

$$1.4637 = 0.1654580$$

$$\begin{array}{rcl} 21'6'' & 42'062 & 89'17'13'' \\ \underline{9} & \underline{1.031} & \underline{2.093} \\ 2.3'' & & \end{array}$$

$$\begin{array}{rcl} 4\sqrt{44.972} & 269.944' & 178'34'26 \\ 0.28 & 44.972 & 1'25'34' \\ 4.5 & 4.219 & 88'24'46 \\ 2.81 & & 2.91'25'34' \\ & & 45'42'47' \\ & & 82'49'32'' \\ & & 160'39'04' \\ & & 14'20'56' \\ & & 28'41'8' \\ & & 2.327 \\ & & 2.608 \\ & & 2.997 \\ & & 2.61 \\ & & 3.278 \\ & & 1.0 \\ & & 4.778 \\ & & 9' \\ & & 4.222 \\ & & 6.116 \\ & & 29.114 \\ & & 4.557 \\ & & 20.286 \\ & & 8.377 \\ & & 11.909 \\ & & 12.632 \\ & & 24.541 \\ & & 4.222 \\ & & 4.222 \\ & & 37.998 \\ & & 38.479308 \\ & & 24.841 \\ & & 63.020 \end{array}$$

Page 43 to end

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